# CMMI and Agile Processes:



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presented to



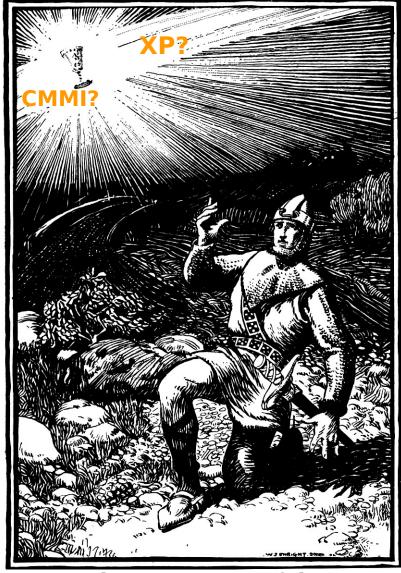
#### **Overview**

- Software development problems are ubiquitous
- CMMI and Agile Methods have been seen as didactic
- Mapping agile to CMMI elements
- Process maturity requirements for agility
- **❖The bottom line**



Like Alice's White Rabbit, software always seems to be late

#### The Situation



An ambiguous vision of the SW development grail

- We're all searching for a solution to the software problem
- CMMI and process improvement attempt to ensure consistency and predictability
- Agile is a response to over-specified processes and dehumanization
- Misunderstanding abounds

## General, Characteristics

- Predictability, Stability, high assurance
- Customer satisfaction, Speed
- Scope
  - Broad, Inclusive and Organizational
  - Small, Focused
- Improvement focus
  - Process
  - People
- Motivation
  - Both want to develop high performance organizations

Managemant Characteristics

- Composite, explicit, as-detailed-as-possible planning
- Collaborative, tacit, just-enough-detail planning
- \* Trust
  - Process Infrastructure
  - Working S/W, Participation
- Organization
  - Hierarchical Committees
  - Individuals and teams
- Size and scaling
  - Large projects and teams, scaling down difficult
  - Small projects and teams, scaling up largely
- Rules
  - Rules are important in both

### Technical Characteristics

- Thoughtful, predictive
- Simple and emergent
- Rework
  - Avoid rework, rework costs increase over time
  - Continuous rework, rework costs low and constant
- \* Requirements, Documentation, and Quality Assurance
  - Comprehensive requirements and test documentation; independent test and quality assurance.
  - Customer participation and operational test cases; minimal documentation; team-based defect removal via refactoring
- Knowledge management
  - Process Assets
  - People

### People & haracteristics and advocates

- Disciplined, Follow Rules and Risk Managers
- Informal, Creative and Risk Takers
- Skill Level
  - Mix of skills with few experts
  - Multi-skilled with more experts
- Communication
  - Macro, Organizational
  - Micro, Person to Person
- Problem Solving
  - Words and Plans
  - Product and Priorities

#### CMMI vs. Agility - The Process Area View

- Project Planning
- Project Monitoring and Control
- Supplier Agreement Management
- Integrated Project Management
- Risk Management
- Integrated Teaming
- Quantitative Project Management
- \* Requirements Management
- \* Requirements Development
- Technical Solution
- Product Integration
- Verification
- Validation

KEY {GREEN : Complementary, BLACK: Neutral, RED: Rough
 Edges}

### CMMI vs. Agility - The Process Area View

- Organizational Process Focus
- Organizational Process Definition
- Organizational Training
- Organizational Process Performance
- Organizational Innovation and Deployment
- Configuration Management
- Process and Product Quality Assurance
- Measurement and Analysis
- Decision Analysis and Resolution
- Organizational Environment for Integration
- Causal Analysis and Resolution

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#### CMMI vs. Agility - The Improvement Path View

- **♦ "LEVEL 1"** 
  - Identify scope of work
  - Perform the work
- **∜** "LEVEL 2"
  - Organizational policy for plan, perform
  - Requirements, objectives and plans
  - Adequate resources
  - Assign responsibility and authority
  - Train the people
  - CM for designated work products
  - Identify and involve stakeholders
  - Monitor and control to plan and take action if needed
  - Objectively monitor adherence to process and QA products/services
  - Review with upper management and resolve issues

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### CMMI vs. Agility - The Improvement Path View

#### **\* "LEVEL 3"**

- Maintain as a defined process
- Measure the process performance to support environment

#### **☆ "LEVEL 4"**

- Establish and maintain quantitative objectives for the process
- Stabilize the performance of one or more subprocesses to determine its ability to achieve

#### **❖ "LEVEL 5"**

- Ensure continuous improvement to support business goals
- Identify and correct root causes of defects

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# How Higher Process Capability Supports Agility

- Process experience
  - Helps decide what process components are critical and which can be removed
  - Instinctive use of minimal process with few artifacts while maintaining the required discipline for success
- Process data
  - Understanding the impact of processes
  - Estimation mastery and knowing how far you can push the envelope and still survive
- Process assets
  - Encourage reuse and quick startups
  - Help maintain and transition knowledge

### Agility and Maturity Level 5: Agile Practices in Support of CMMI Level 5

- Objectives \* Improvements are selected based on an understanding of their expected contribution to achieving the organization's process improvement objectives versus the cost & impact.
  - "Optimizing processes that are agile and innovative depend on the participation of an empowered workforce aligned with the business values and objectives of the organization." \*\*
  - The organization's ability to rapidly respond to changes is enhanced by finding ways to accelerate and share learning.
  - **❖** Alternative practices must clearly and unequivocally accomplish a result that meets the goal.
  - CMMs enable creativity and improvement within a contextual framework
    - Many CMM practices are informative; providing insight as to what might be done to accomplish expected practices
    - Practitioners should be encouraged to improve the practices that are used to accomplish project and organizational objectives

<sup>\* &</sup>quot;Minimizing Unintended Consequences of Process Streamlining," STC2002, May 2002 presentation, Joe Jarzombek

<sup>\*\* &</sup>quot;Agile Development and the CMMI: Anti-Matter and Matter or Reconcilable Differences?" Presentation at STC, May 2002, Steve Ornburn & David Kane.

#### **Conclusions**

- Differences are often in approach rather than substance
- Perceptions (on both sides) are not necessarily valid
- "Liberal" interpretation of CMMI generally consistent with agile
  - Organizational facets of CMMI are most "out of synch"
  - Levels 3 and 4 are most problematic because they tend to be most process-centric

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ocates will help misconceptions